

hygiene, type of lunch, drinking water, and school cleaning assignments. Rectal swabs were collected from suspect cases, their contacts and the school cooks. We investigated the sewage system, potable and non-potable water in the school. Stool and water samples were sent for cultures and pulsed-field gel electrophoresis (PFGE).

**Results:** There were 275 suspect cases (attack rate = 37.1%) occurred during the 4 weeks before November 22, 2007. A total of 57 confirmed and 7 asymptomatic cases were found during the outbreak. Poor hand hygiene after toilet was associated significantly with illness (odds ratio = 1.52; 95% confidence interval: 1.03–2.23). Environmental investigation revealed that groundwater used for hand-washing in lavatories was contaminated by a leaked septic tank. One of these water samples yielded *Shigella sonnei*. The bacteria isolated from rectal swabs and from the water sample had an indistinguishable PFGE pattern.

**Conclusion:** It was a *Shigella* waterborne outbreak. The outbreak ended after all hand-washing facilities switched to using tap water exclusively. The outbreak did not spread to the community. Using tap water was recommended to avoid such outbreaks in schools. However, in such an outbreak, hand hygiene is still a protecting factor.

doi:[10.1016/j.ijid.2008.05.569](https://doi.org/10.1016/j.ijid.2008.05.569)

40.060

#### Effect and Adverse Effect of Erythromycin Internal Use for Prevention of Whooping Cough Infection

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**Background:** The group infection of the whooping cough happened in the Kagawa University medical department district in May, 2007. We performed the administration of the erythromycin internal use 1,000mg a day (400-200-400) for 10 days for attached hospital personnel to prevent breakout to hospital inpatients.

**Methods:** Questionary survey was performed for 1,566 people to assess effect and adverse effect of erythromycin. The investigation contents were having adverse effects or not, kind of the adverse effects, compliance, developing whooping cough or not.

**Results:** The administration of the erythromycin was able to prevent the infection of the whooping cough. However adverse effects were different from known about it conventionally. eg) nausea, vomiting (1.2%), diarrhea (0.9%), stomachache (0.8%), and flatulence (0.8%).

**Conclusion:** These results indicated that the adverse effects such as the diarrhea appeared at high frequency than the things shown in the package insert. These results may lead to the improvement of the package insert of the medicine.

doi:[10.1016/j.ijid.2008.05.570](https://doi.org/10.1016/j.ijid.2008.05.570)

#### Prevalence of *Bartonella* spp., *Babesia microti*, and *Anaplasma phagocytophilum* Serologic Markers in Patients with Lyme Disease

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**Background:** Some pathogens, including *Bartonella* sp., *Babesia microti* and *Anaplasma phagocytophilum*, have been identified in ticks, and cotransmission with *B. burgdorferi* has been documented. Infections, especially Babesial, can range in severity from mild, subclinical infection, to fulminate, potentially life-threatening illness. We try to assess the seroprevalence of coinfections in Lyme disease patients.

**Material and Methods:** Study group consisted of thirty patients with Lyme disease. Infection with *Borrelia burgdorferi* was confirmed with commercially available enzyme-linked immunosorbent assay (ELISA) and a recombinant immunoblot identifying both IgM and IgG specific antibodies. Using the indirect immunofluorescent assay (IFA) IgG antibodies against *Anaplasma phagocytophilum*, against *Bartonella* sp. (*B. henselae*, *B. quintana*) and *Babesia microti* were assessed.

Clinical manifestations and response to treatment were evaluated in the Department of Infectious Diseases, Medical University of Lublin.

**Results:** The IgG antibody response to *Bartonella* was found in 13 of 30 patients (43.3%), but only in 2 cases (6.7%) the titers were  $\geq 1:256$ , which are considered presumptive evidence of recent infection. Antibodies against *Anaplasma phagocytophilum* were found only in 2 patients (6.7%). Serologic evidences of Babesial infection were identified in 3 cases (10%). Both patients with high *Bartonella* titer were also positive in *Anaplasma phagocytophilum* and *Babesia* tests. They suffered from severe clinical symptoms of arthritis, nervous system involvement and febrile episodes.

**Discussion and conclusions:** Interpretation of serology results in tick-borne diseases may be difficult. High percentage of seropositivity to *Bartonella* infection and the presence of antibodies against *A. phagocytophilum* may indicate possible coinfection with other than *B. burgdorferi* agents transmitted by ticks. As symptoms of these infections may be similar to those of Lyme disease clinical diagnosis is difficult. On the other hand coinfections may explain more severe presentations. Adequate and reliable diagnosis of tick-borne diseases is of great importance due to differences in anti-infective treatment.

doi:[10.1016/j.ijid.2008.05.571](https://doi.org/10.1016/j.ijid.2008.05.571)

40.062

#### Laboratory Associated Brucellosis in a Non Endemic Area

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**Background and Objectives:** Brucellosis, a zoonotic disease, was not endemic till 2006 among PUO cases as evident

by serology. In the last 2 years migration of workers from endemic area from North Karnataka has resulted in upsurge of Brucellosis in this area. So evaluation of all PUO for brucellosis was done for 2 years. There was laboratory associated infection among 4 postgraduate students who worked with blood culture automated system.

**Methods:** During 2 years duration 841 cases of PUO were admitted to Kasturba Hospital Manipal and evaluated. 32 cases were diagnosed as Brucellosis by isolation in blood culture, standard tube agglutination test and ELISA for IgM and IgG.

**Results:** Out of 32 cases 15 were blood culture positive and 17 were positive only by serology. 15 blood culture positive cases also had very high antibody titer in tube agglutination test in the range of 320 to 2560 international units for all the patients.

**Conclusion:** PUO due to brucellosis are increasingly being reported in this area which was previously not encountered. Brucellosis has to be kept in mind for all PUO cases.

Due care has to be taken in laboratory while handling clinical specimens.

doi:10.1016/j.ijid.2008.05.572

40.063

#### Characteristics of Invasive Pneumococcal Disease (IPD) in Adults in South India

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**Background:** There are limited data on the patient characteristics in adults with IPD in India. We report a current prospective assessment of IPD detected by culture and urinary antigen in adults in a large referral medical center in India.

**Methods:** Adult patients admitted in Christian Medical College, Vellore, with clinical symptoms of pneumonia, meningitis or septicaemia were enrolled from June 2007. CSF or other normally sterile body fluids, and urine were collected. *S. pneumoniae* was identified using standard culture techniques or antigen testing (BinaxNOW<sup>®</sup>) on body fluids. 171 urine specimens are being tested by Binax<sup>®</sup>, the MIC values were determined by agar dilution method and the isolates are being serotyped.

**Preliminary Results:** A total of 185 patients aged 18 years through 95 years were enrolled in first 6 months. 64 (36%) were females, 56 (30%) had diabetes mellitus, 22 (12%) had chronic obstructive airway disease, 12 (6.5%) had congestive cardiac failure and 9 (5%) had HIV infection. 165 blood, 64 CSF and 34 other body fluid specimens were collected. 18 cases of *S. pneumoniae* were identified by culture and additional 5 cases were detected by Binax on body fluids, a total yield of 12.5%, with yields of 12 (7.2%) from blood, 7 (10.9%) from CSF and 2 from other specimens. 93% of the isolates were resistant to cotrimoxazole. All the isolates were sensitive to penicillin, erythromycin, chloramphenicol and cefotaxime. Case fatality rate was 21.7%.

**Conclusion:** This is an update of current adult IPD in India and the first report of urinary antigen detection from India.

Compared to earlier data (Lancet 1999; 353:1216–21), we observed an increase in the resistance to cotrimoxazole, though other antimicrobials appeared effective. These data will provide information needed to consider policies for prevention and empirical management of adult IPD.

doi:10.1016/j.ijid.2008.05.573

40.064

#### Prevalence and Risks of *Vibrio parahaemolyticus* in Black Tiger Shrimp (*Penaeus monodon*)

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**Background:** The objective of this study was to determine the prevalence of *Vibrio parahaemolyticus* and its virulent strains in frozen and unprocessed cultured shrimp as well as their culture environment in Malaysia. The scope of this work was also to assess the risk of acquiring gastroenteritis due to *V. parahaemolyticus* for local population as a result of consumption of cooked black tiger shrimp and also for Japanese consumption of uncooked shrimp imported from Malaysia.

**Methods:** Frozen shrimps (30 samples), live shrimps (40 samples), sediments (38 samples) and water samples (48 samples) were collected from a shrimp factory and 3 farms respectively. A total of 241 suspected isolates were tested (50: frozen shrimp, 50: cultured live shrimp, 67: sediments and 74: water) targeting the *toxR*, thermostable direct hemolysin (*tdh*) and related hemolysin (*trh*) genes for confirmation of total and pathogenic *V. parahaemolyticus*. Microbiological risk assessment was conducted in order to estimate the risk of infection using @RISK software (Palisade USA).

**Results:** *V. parahaemolyticus* was detected in 98% of water samples with densities ranging from 10 to 420 cfu/ml whereas it was 200 to 9000 cfu/g for pond sediments. It was detected in all live shrimp samples with densities ranging from 300 to 8000 cfu/g. 43% of frozen shrimp samples were contaminated with *V. parahaemolyticus* ranging from 4 to 93 MPN/g. 46.5% of strains were found to be positive for *toxR* and 8% of the isolates from culture environment possessed the haemolysin *tdh* gene and *trh* gene. 7% of frozen shrimp samples were positive for virulent genes. Estimated illness per year is 123 persons (age from 18 to 59 years) for Malaysia and 63 for Japan.

**Conclusion:** This study indicated that pathogenic *V. parahaemolyticus* strains were present in shrimp culture environment in Malaysia and suggest a probable risk for health of people consuming raw shrimp.

doi:10.1016/j.ijid.2008.05.574